What is claimed is:

1. A porous substrate, comprising a plurality of porous layers thereon, wherein the average opening diameter of pores in a porous layer of said plurality of porous layers positioned in an outermost surface is smaller than the average diameter of pores in a porous layer of said plurality of porous layers positioned on a substrate side relative to said porous layer positioned in said outermost surface.

2. A porous substrate, comprising a plurality of porous layers thereon, wherein the average opening diameter of pores in a porous layer of said plurality of porous layers positioned in an outermost surface is smaller than the average diameter of pores in a porous layer of said plurality of porous layers positioned on a substrate side relative to said porous layer positioned in said outermost surface; and the volume porosity of said plurality of porous layers is 10 % - 90 %.

3. A porous substrate, comprising two porous layers thereon, wherein the average opening diameter of pores in a first porous layer of said two porous layers positioned in an outermost surface is smaller than the average diameter of pores in a second porous layer positioned on a substrate side relative to said first porous layer; and more than 50 % of said pores in said first porous layer penetrate from the surface of said first porous layer to the interface between said first and second porous layer.

4. A porous substrate, comprising two porous layers thereon, wherein the average opening diameter of pores in a first porous layer of said two porous layers positioned in an outermost surface is smaller than the average diameter of pores in a second porous layer positioned on a substrate side relative to said first porous layer; more than 50 % of said pores in said first porous layer penetrate from the surface of said first porous layer to the interface between said first and second porous layer; and the volume porosity of said first and second porous layer is 10 % - 90 %.

5. The porous substrate according to claim 3 or 4, wherein said first porous layer comprises a metal material.

6. The porous substrate according to claim 3 or 4, wherein said first porous layer comprises a metal oxide, a metal nitride, or a metal carbide.

7. The porous substrate according to claim 3 or 4, wherein said second porous layer comprises a semiconductor material.

8. The porous substrate according to claim 3 or 4, wherein said second porous layer comprises a group III nitride series compound semiconductor material.

9. The porous substrate according to claim 3 or 4, wherein said first porous layer comprises TiN or Pt, and said second porous layer comprises GaN.

10. The porous substrate according to claim **3** or **4**, wherein said average opening diameter of said porosity in said first porous layer is not more than 1μm.

11. The porous substrate according to claim **3** or **4**, wherein the film thickness of said first porous layer is not more than 1μm.

12. A fabrication method for a porous substrate, comprising growing two or more different material layers on a substrate, heating said each layer, and thereby forming two or more porous layers with pores therein.

13. A GaN series semiconductor layered substrate, comprising a GaN series semiconductor layer grown on a porous substrate defined in any one of claims **1-11**.

14. A fabrication method for a GaN series semiconductor layered substrate, comprising growing two or more different material layers on a substrate, heating said each layer, thereby forming a porous substrate with two or more porous layers having pores therein, and growing a GaN semiconductor layer on that porous substrate.